



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,884	07/10/2002	Hidekazu Tanaka	2002 0405 A	6831

513 7590 10/04/2005

WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER

SUTHERS, DOUGLAS JOHN

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/089,884	Applicant(s) TANAKA ET AL.	
	Examiner Douglas Suthers	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/05/02, 08/22/05</u> | 6) <input type="checkbox"/> Other: _____ |

BM

DETAILED ACTION

Drawings

1. The drawings are objected to because figures 1, 3, and 5 do not show multiple inverting inputs to the subtracter as disclosed. Instead they show multiple signals combining in an unknown manner and a single inverting input to the subtracter. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: The brief description of the drawings describes figures 7(A) and 7(B) but no such figures exist. These should be changed to 8(A) and 8(B). Also page 4 line 10 uses "substracter" where "subtractor" should be used.

Appropriate correction is required.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Loudspeaker distortion prevention circuit using filtered negative feedback.

4. The applicant uses the term "secondary" as in secondary "high-pass filter" at times when no primary filter exists (page 6 line 17 for example). The question is posed to the applicant whether they intended to mean "second order high-pass filter".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konno et al. (US 6122385) in view of Matsushita (JP 7-16299 A).

7. Regarding claim 1, Konno discloses in figure 1 a loudspeaker device comprising: a power amplifier (11) for receiving an input signal via a subtracter (10); a speaker unit

(13) for reproducing an output signal of the power amplifier (11); a microphone (14) for detecting acoustic outputs radiated from the speaker unit (13); a microphone amplifier (15) for amplifying an acoustic output signal detected by the microphone (14); and a negative feedback circuit, wherein the negative feedback circuit is formed by connecting an acoustic output signal of the microphone amplifier (15) to the subtracter (10)(path from 15 through 16 and 17 to 10) and at the same time by connecting the acoustic output signal of the microphone amplifier to the subtracter via a high-pass filter (16) (path from 15 through 16 and 17 to 10).

Konno does not disclose expressly the use of an acoustic pipe.

Matsushita discloses an acoustic pipe (2) coupled in front of the speaker unit (1) for guiding sound waves reproduced by the speaker unit.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the acoustic pipe of Matsushita with the device of Konno. The motivation for doing so would have been to have the signal received by the microphone more naturally reflect those by a listener (in phase) and allow for differing frequency responses for the speaker enclosure. Therefore, it would have been obvious to combine Matsushita with Konno to obtain the invention as specified in the claim 1.

8. Regarding claim 2, the loudspeaker device of claim 1 is disclosed as above. Konno also discloses wherein the high-pass filter (16) is used for the purpose of secondary high-pass filter (figure 2) and the cutoff frequency is matched with the resonance frequency (figure 3).

9. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konno et al. (US 6122385) in view of Meyers (US 3798374) and Matsushita (JP 7-16299 A).

10. Regarding claim 3, Konno discloses in figure 1 a loudspeaker device comprising: a power amplifier (11) for receiving an input signal via a subtracter (10); a speaker unit (13) for reproducing an output signal of the power amplifier (11); a microphone (14) for detecting acoustic outputs radiated from the speaker unit (13); a microphone amplifier (15) for amplifying an acoustic output signal detected by the microphone (14); and a negative feedback circuit, wherein a negative feedback circuit is formed by connecting an acoustic output signal of the microphone amplifier(15) to the subtracter (10)(path from 15 through 16 and 17 to 10).

Konno does not disclose expressly the use of an acoustic pipe or the use of multiple filters.

Matsushita discloses an acoustic pipe (2) coupled in the front of the speaker unit for guiding sound waves reproduced by the speaker unit.

Meyers discloses in figure 1 a feedback circuit with a primary (C73) and a secondary (R72 and C74) high-pass filters connected in parallel.

At the time of the invention it would have been obvious to a person of ordinary skill in the art use the acoustic pipe of Matsushita and the filter of Meyers in the device of Konno. The motivation for doing so would have been to have the signal received by

Art Unit: 2644

the microphone more naturally reflect those by a listener (in phase) and allow for differing frequency responses for the speaker enclosure. Therefore, it would have been obvious to combine Matsushita and Meyers with Konno to obtain the invention as specified in the claim 3.

11. Regarding claim 4, Konno discloses in figure 1 a loudspeaker device comprising: a power amplifier (11) for receiving an input signal via a subtracter (10); a speaker unit (13) for reproducing an output signal of the power amplifier (11); a microphone (14) for detecting acoustic outputs radiated from the speaker unit (13); a microphone amplifier (15) for amplifying an acoustic output signal detected by the microphone (14); and a negative feedback circuit, wherein the negative feedback circuit is formed by connecting an acoustic output signal of the microphone amplifier(15) to the subtracter (10)(path from 15 through 16 and 17 to 10).

Konno does not disclose expressly the use of an acoustic pipe or the use of multiple filters.

Matsushita discloses an acoustic pipe (2) coupled in the front of the speaker unit (1) for guiding the sound waves.

Meyers discloses in figure 1 a feedback circuit with a primary (C73) and a secondary (R72 and C74) high-pass filters connected in parallel. Although Meyers does not expressly disclose the use of a low-pass filter, they do teach that a more elaborate equalizer may be used (column 5 lines 15-19) and that low and high frequencies must be handled differently (column 4 lines 4-17). Therefore it would be

obvious to one of average skill in the art that one of the high pass filters of Meyers could be replaced with one of a primary low-pass filter and a secondary low-pass filter. The suggestion to do so had been given by Meyers (column 5 lines 4-17).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to add the acoustic pipe of Matsushita and the filter of Meyers. The motivation for doing so would have been to have the signal received by the microphone more naturally reflect those by a listener (in phase) and allow for differing frequency responses for the speaker enclosure. Therefore, it would have been obvious to combine Matsushita and Meyers with Konno to obtain the invention as specified in the claim 4.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas Suthers whose telephone number is (571)272-0563. The examiner can normally be reached on 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

djs


XU MEI
PRIMARY EXAMINER